

CLAIMS

What is claimed is:

1. A pickup error-sensing apparatus for an image forming apparatus, comprising:
a sensing actuator positioned on a paper cassette and movable when sheets of paper are loaded into the paper cassette;
a paper sensor unit outputting a paper loading signal and a paper unloading signal according to the movement of the sensing actuator;
a sensing actuator-operating unit operating the sensing actuator allowing the paper sensor unit to output the paper unloading signal when a pickup unit carries out a pickup movement; and
a control unit determining whether the paper unloading signal is output from the paper sensor unit when the pickup unit carries out the pickup movement, and determining an occurrence of a pickup error to interrupt the operation of the image forming apparatus when the paper unloading signal is not output.
2. The apparatus of claim 1, wherein the paper sensor unit comprises a photo sensor having a light emitting part and a light receiving part.
3. The apparatus of claim 2, wherein the sensing actuator comprises:
an actuating member movable by the sheet of paper loaded in the paper cassette, and
a sensing trigger movable between the light emitting part and the light receiving part of the photo sensor allowing the photo sensor to be displaced between a first position outputting the paper unloading signal, and a second position outputting the paper loading signal, according to the movement of the actuating member.
4. The apparatus of claim 3, wherein the sensing actuator further comprises a supporting rod rotatably supported at the frame and integral with the actuating member and the sensing trigger.
5. The apparatus of claim 3, wherein the sensing actuator-operating unit, comprises:

a knock-up plate having a paper sensing opening therein to receive the actuating member, wherein the actuating member is moved by the sheets of paper when the sheets of paper are loaded in the paper cassette, and

a displacement part of the pickup unit, wherein when the sheets of paper are loaded in the paper cassette, the part is separated from the knock-up plate displacing the sensing trigger into the second position before, and after, the pickup unit carries out the pickup movement, and displacing the sensing trigger into the first position while the pickup unit carries out the pickup movement.

6. The apparatus of claim 3, wherein the sensing actuator-operating unit comprises:

a knock-up plate disposed at the paper cassette elastically supporting the sheets of paper to be upwardly and downwardly movable, and having a paper sensing opening therein to receive the actuating member, wherein the actuating member is lifted up by the sheets of paper when the sheets of paper are loaded in the paper tray or cassette, and

a partial, cylindrical part at a part of the pickup unit, wherein when the sheets of paper are loaded in the paper tray or cassette, the partial, cylindrical part is separated from the knock-up plate, and the sheets of paper, maintaining the knock-up plate in an upward position and displacing the sensing trigger into the second position before, and after, the pickup unit carries out the pickup movement, and the partial, cylindrical part comes in contact with the knock-up plate, and the sheets of paper, maintaining the knock-up plate in a downward position displacing the sensing trigger into the first position while the pickup unit carries out the pickup movement.

7. The apparatus of claim 6, wherein the part of the pickup unit comprises one of a pickup roller and a shaft of the pickup roller.

8. The apparatus of claim 1, wherein the sensing actuator-operating unit comprises an operating lever as a part of the pickup unit, wherein when the sheets of paper are loaded in the paper cassette, the sensing actuator is displaced into a second position so the paper sensor unit outputs the paper loading signal before and after the pickup unit carries out the pickup movement, and into a first position so the paper sensor unit outputs the paper unloading signal while the pickup unit carries out the pickup movement.

9. The apparatus of claim 1, wherein the control unit further comprises at least one of an audible alarm and a visual display indicating an occurrence of the pickup error.

10. A pickup error-sensing method for an image forming apparatus, comprising:
determining whether a paper loading signal is output from a paper sensor unit;
determining whether a pickup driving signal is input when the paper loading signal is output;
driving a pickup unit when the pickup driving signal is input;
determining whether a paper unloading signal is output when the pickup unit is driven;
and
determining the occurrence of a pickup error to stop the operation of the image forming apparatus when the paper unloading signal is not output.

11. The method of claim 10, wherein the determining whether the paper unloading signal is output comprises determining whether the paper unloading signal is output until a predetermined time passes from a point of time when the pickup driving signal is input.

12. The method of claim 11, wherein the determining the occurrence of a pickup error to stop the operation of the image forming apparatus further comprises at least one of sounding an audible alarm and visually displaying an occurrence of an alarm.

13. A computer-readable medium encoded with processing instructions implementing a method for pickup error-sensing for an image forming apparatus, the method comprising:
determining whether a paper loading signal is output from a paper sensor unit operated by a sensing actuator disposed with respect to a paper tray or cassette;
determining whether a pickup driving signal is input when the paper loading signal is output;
driving a pickup unit when the pickup driving signal is input;
determining whether a paper unloading signal is output from the paper sensor unit when the pickup unit is driven; and
determining the occurrence of a pickup error to stop the operation of the image forming apparatus when the paper unloading signal is not output.

14. The computer-readable medium according to claim 13, wherein the determining whether the paper unloading signal is output comprises determining whether the paper unloading signal is output until a predetermined time passes from a point of time when the pickup driving signal is input.

15. The computer-readable medium according to claim 13, determining the occurrence of the pickup error to stop the operation of the image forming apparatus further comprises at least one of sounding an alarm indicating the occurrence of the pickup error to outside through a speaker, and displaying the occurrence of the pickup error.

16. A pickup error-sensing apparatus for an image forming apparatus, comprising:
a sensing actuator movable when sheets of paper are loaded into the paper cassette;
a paper sensor unit outputting a paper loading signal, and a paper unloading signal when a pickup unit carries out a pickup movement according to the movement of the sensing actuator; and

a control unit determining an occurrence of a pickup error to interrupt the operation of the image forming apparatus when the paper unloading signal is not output within a predetermined time.

17. The apparatus of claim 16, wherein the paper sensor unit comprises a photo sensor having a light emitting part and a light receiving part.

18. The apparatus of claim 17, wherein the sensing actuator comprises:
an actuating member movable by the sheet of paper loaded in the paper cassette, and

a sensing trigger movable between the light emitting part and the light receiving part of the photo sensor allowing the photo sensor to be displaced between a first position, outputting the paper unloading signal, and a second position, outputting the paper loading signal, according to the movement of the actuating member.

19. The apparatus of claim 16, wherein the control unit further comprises at least one of an audible alarm and a visual display indicating an occurrence of the pickup error.